Section	Segment	Mile Post	Identified Problem / Potential Solution (Magnitude)	FHWA #
W.Tu	west runner другоасп	23.29	Road settlement and creeping / 8' Slab with anchors - keyed with toe wall (200 LF)	22.99
≥		23.3	Uphill soil cut erosion due to steepness / Wire mesh biomat (500 SY)	
		23.5	Uphill soil cut erosion due to steepness / Wire mesh biomat (400 SY)	
		23.62	Concrete box trench drain erosion at outlet / Rip rap rundown (20 CY)	
		23.64	West Tunnel with some large slabs above view area / Spot bolts both locations (300 LF)	
		23.65	West Tunnel uphill portal is missing curb at waterfall / Install curb (20 LF)	
		23.65	West Tunnel broken stones, grout cracking / Replace 120 SY concrete pavement, stones to be 7.5x12 (120 SY)	
		23.66	West Tunnel uphill portal missing rock masonry / Replace, patch and point (120 SY)	
		23.68	20' guardwall missing to allow drainage / Remove existing, install new trench drain, build new guardwall on 4' slab (20 LF wall / 35 LF trench drain)	
		23.74	Stone retaining wall with broken stones, grout cracking / Point and patch (800 SF)	23.44
	West Tunnel	23.75	Stone retaining wall moving, grout failing / FHWA has design slated for construction 2001	23.47
	west Tunner	23.77	Stone retaining wall with some cracked grout and stones, road subsidence inside wall / Point and patch, template rehab (300 LF)	23.51
		23.85	Stone retaining wall tilting - moving / FHWA has design slated for construction 2004	23.54
ine		23.88	Rock face above road with loose rock / Scaling, crane and hand (50 hr scaling)	
Alpine		23.9	Drainage against walls / Concrete valley pan, 3 outlets with flat stone rundowns (300 LF)	
		23.9	Stone retaining wall with erosion at toe / Rip rap toe of retaining wall (30 CY) See FHWA	23.65
			Report	
		23.95	Stone retaining wall failing / Rebuild wall on footer (300 SF wall - See FHWA Report)	23.66
		23.97	Stone retaining wall settlement and erosion at footing / FHWA has design slated for construction 2004 (see FHWA Report)	23.66
		23.98	Rock face above road with loose rock / Scaling, crane and hand (30 hr scaling)	23.67
		24.07	Asphalt curb in disrepair, shoulder raveling, but 13' lane here from centerline / Remove curb, cut 2' of asphalt from edge and shoulder with Class 7 (250 LF)	
		24.1	Blasted rock is possible source of guard and retaining wall rock / Use slusher to recover 200-300 CY Ashlar stone and rubble (300 CY)	
	The Loop	24.2	Loop Parking Lot has impact damage to wall / Install parking stops to prevent vehicles from hitting wall (20 EA)	
		24.2	Loop Parking Lot has guardwall undermined for 200 LF / Grout repair needed under wall (200 LF)	
	The Lean	24.5	Low Guard Wall / Lower roadway 6 in. (500 SY)	
	The Loop	24.5	Concrete pipe with stone headwall broken at outlet / Replace 30" RCP (16 LF)	

Section	Segment	Mile Post	Identified Problem / Potential Solution (Magnitude)	FHWA#
		24.6	Road shows subsidence cracking, wall doesn't / Roadway template rehab - 4 ft sub exc.(100 LF)	
		24.66	Ashlar guardwall is low and tipping / Remove and replace on 8' slab, 2 scuppers also needed (300 LF)	
		24.7	Stone retaining wall is low and tipping / Remove guardwall portion and place on 8' slab (125 LF)	24.44
		24.8	Roadway damage due to drainage against walls / Install drop inlet and weepholes (1 EA)	24.56
		24.8	Crystal Point Arch Failed / FHWA has design	24.56
		24.8	Pullout guardwall at Crystal Point shows low wall / Safety concerns -lower roadway template 8" for 150 LF (500 SY)	
		24.9	Roadway damage due to no drainage across road / Install trench drain with pipe through wall (1 EA)	
Alpine	Crystal Point Arch	24.9	Stone and concrete retaining wall has veneer peeling from concrete, removeable barrier not crash tested / Remove and replace veneer wth compatible stone,replace removeable barrier - replace with removable ARG (45 LF)	
Alf		25	Damaged concrete pavement and drainage pan, cracking & spalling / Replace 630SF concrete after subexc, stone size 9 x 7, replace 100 LF of pan - 30" hillside pan, seal joints (630 SF)+D79	
		25	Stone retaining wall - guardwall portion failing, impact damage / Repair guardwall for full length 80' - See FHWA Report (240 SF)	24.69
		25	Guardwall subsidence due to raveling below wall / Install a 30'w x 4'H drystack wall below this guardwall in raveled area (120 SF)	
		25	CMP headwall damaged causing erosion into lane / Repair headwall to regain lane width, also install bollard (1 EA)	
		25	Random rubble guardwall foundation problems and low wall / Repair foundation for 30', lower template 4-8" (100 LF)	24.78
		25.1	Several locations this area will require milling before overlay to prevent low guardwall	
		25.1	CMP with stone headwall plugged, no grate on inlet / Clean pipe, install bollard (1 EA)	
		25.1	Rock face above road has loose rock / Scaling, crane and hand (10 hr)	
		25.1	Stone and concrete retaining wall - concrete portion stable, rock portions have foundation	
		20.1	problems / In rock area rebuild top 4' of wall on 8' slab w/anchors (30 LF)	24.89
		25.2	CMP with stone headwall -hillside Inlet is blocked, small diameter pipe / Rebuild headwall on skew to ditch, install 30" new RCP on skew - headwall repair + 60' pipe w rip rap (60 LF - 10 CY rip rap)	

Section	Segment	Mile Post	Identified Problem / Potential Solution (Magnitude)	FHWA#
		25.2	Ashlar guardwall tipping, road shows movement / Roadway rehab and guardwall on 8' slab (70 LF)	
	Crystal Point Arch	25.2	CMP with stone headwall failing, pipe damaged / Repair headwall, remove existing inlets and install drop inlet Type C - new inlet drop into single pipe (60 SF)	
		25.2	CMP with stone headwall failing, pipe damaged / Repair headwall, replace 2-24' CMP with 24" RCP, install bollard (80 LF pipe, 60 SF)	
		25.3	Stone retaining wall - top 2' damaged for 20', some tipping / Repair top 2 ft (20 LF)	25.02
		25.3	Rock face above road has loose rock / Scaling, crane and hand (20 hr)	
		25.3	Roadway drainage problem with water running against guard wall / Install concrete pan (100 LF)	
		25.4	Trash rack catching all material -plugging / Install new rack on 45 deg angle with bars on 8" centers - excv clean out hole above trash rack - blasting required (1 EA)	
ခ		25.5	Uphill soil cut erosion due to steepness / Wire mesh biomat (5600 SF)	
Alpine		25.5	Localized roadway subsidence caused by drainage problems / Install 30" RCP on a 45 degree skew across the roadway - remove and replace fill in subsidence area (75 LF- 100 CY)	
	Alder Creek	25.5	Slope creep enhanced by water / Roadway template rehab - include pullout at 913+50 (400 LF)	
		25.5	Saturation of uphill ditch / Install 30" RCP on a 45 deg. skew across the D95roadway (75 LF rip rap)	
		25.5	Vertical roadway movement / Install 8" anchored slab (170 LF)	
		25.5	Road and guard all moving downhill / Remove and replace wall on 8' slab with piles & anchors (60 LF)	
		25.5	Drainage against guardwalls / 2 inlet collection with 1 outlet (2 EA)	
		25.5	Stone retaining wall footer undermining, guardwall needs repair / Footing repair, point and patch - See FHWA Report (80 hr)	25.29
		25.6	Roadway fines washed out under asphalt, pavement failing / When trenching for collection sysyem (below) fill with flowfill (25 CY)	
		25.6	Drainage against walls / Install 4 inlet collection system with one outlet onto rock formation (4 EA, 180 LF 24" RCP)	
		25.6	CMP with stone headwall plugged with sediment / Clean, enlarge basin uphill side, install trash rack with 12" gaps	
		25.6	Stone retaining wall - guardwall in bad repair / Rebuild guardwall on top of retaining wall (113 LF)	

Section	Segment	Mile Post	Identified Problem / Potential Solution (Magnitude)	FHWA#
		25.7	Rock face above road with loose rock / Scaling, crane and hand - need staining on rock and wall (30 HR)	
		25.7	Missing guardwall / Rebuild on 4' footer - rock source downhill (100 LF)	
		25.7	Tipping guardwall / Remove and replace on 4'Footer (70 LF)	
		25.7	Guardwall tipping, road shows movement / Remove and replace on 8'slab w/anchors without piles - 20' spacing (100 LF)	
	Alder Creek	25.8	Open mesh inlet not functioning / Remove and replace with Type C corten close mesh grate, 80'- 24"RCP (1 EA)	
	Alder Creek	25.8	Material to back top of guardwall / Remove, some salvageable rock (30 CY)	
		25.8	Tipping guardwall / Remove and replace on 4' footer (75 LF)	
<u>a</u>		26	Drainage to wall no outlet / Add a two inlet collection system with 1 outfall, 100lf 18", rip rap (20 CY)	
Alpine		26	Stone retaining wall grout cracking and spalling top 8-10' - guardwall damage / Point and patch (2000 SF) repair guardwall (50 LF)	25.68
		26.1	Tipping guardwall / Remove and replace on 4' footer (125 LF)	
		26.1	No grate on inlet / Install bollard (1 EA)	
		26.1	Rock face above road with loose rock / Scaling, crane and hand (40 hr)	
		26.1	Low guardwall with super and road problems / Lower template 1' add inlet (100 LF)	
		26.1	Missing section of guardwall / Install new section of ARG guardwall (100 LF)	
		26.2	Low guardwall / Lower roadway template 4-6" (120 SY)	
		26.9	Road Settlement / Roadway template rehab (300 LF)	
		27	Stone retaining wall impact damage and cracking of guardwall portion / Repair existing wall See FHWA Report (225 LF)	26.75
		27	Rock face above road with loose rock / Scale, crane and hand (50 hr)	
	Haystack Creek	27	CMP rotted out / Line or replace (75 LF)	
	-	27	Subsidence behind stone retaining wall / Road rehab without disturbing wall See FHWA Report (110 LF)	26.81
		27	Super to wall with no outlet / Install scupper (1 EA)	
		27	Rock face above road with loose rock / Scaling, crane and hand (150 hr)	
		27	Impact damage and cracking, 70' missing random rubble guardwall / Replace top 4' with ARG (100 LF)	
		27.1	Avalanche damage to retaining wall, seeping water / Rehab template with french drain - Replace top 4' with ARG (73 LF)	26.89

Section	Segment	Mile Post	Identified Problem / Potential Solution (Magnitude)	FHWA #
		27.1	Avalanche damage to retaining wall, seeping water / Rehab template with french drain - Replace top 4' with ARG (169 LF)	26.91
		27.1	CBC X drain taper section undermined / Remove and repalce w/ rip rap (20 CY)	
		27.1	Rock face above road with loose rock / Scaling, crane and hand (150 hr)	
		27.2	Missing guardwall / Rebuild on 15' on 4' slab (15 LF)	
		27.2	Damaged top 4" of retaining wall / Remove and replace with ARG (100 LF), patch and repoint (2200 SF)	
		27.3	Impact Damage and Cracking to guradwall / Replace top 4' with ARG (40 LF)	
		27.3	Non crash tested removable rail / Replace with FHWA crash tested removable on 8' Slab (125 LF)	
a		27.3	Concrete walls at Haystack does not match historic / Either demo and rebuild with suitable or face with stone (150 LF)	
Alpine	Haystack Creek	27.4	Non crash tested removable rail / Replace with FHWA crash tested removable on 8' Slab (100 LF)	
		27.4	Stone retaining wall subsidence and leaning / Remove top 4' of wall, roadway rehab, 12' slab w/piles & anchor, rebuild wall (150 LF)	
		27.4	Tipping guardwall / Remove and replace on 4' footer - Salavagable rock here (140 LF guard+D147wall)	
		27.4	Water hitting CMP headwall at angle / Remove and replace headwall at 20 deg. angle, replace pipe (30 SY - 80' 24" RCP)	
		27.5	Tipping guardwall /	
		27.6	Rock face above road with loose rock / Scaling, crane and hand (40 hr)	
		27.6	Low guardwall / Lower roadway template 10" (1300 SY)	
		27.6	No grate on inlet / Install bollard (1 EA)	
		27.7	Concrete End Taper Undermined / Demo concrete add rip rap end treatment (20 CY grouted rip rap)	
		27.7	Low guardwall / Add rock to raise (25 LF)	
		27.7	Non crash tested removable rail / Replace with guardwall on 4' slab (100 LF)	
		27.7	No drainage across road / Drop inlet with 75' of pipe (1 EA)	
		27.7	Non crash tested removable rail / Replace with ARG (100 LF)	
		27.9	Non crash tested removable rail / Replace with stone guardwall on 4' slab (200 LF)	
	Haystack Creek	27.9	Low guardwall / Replace with guardwall on 4' slab (100 LF)	
		27.9	No grate on inlet / Install bollard (4 EA)	
		28	Non crash tested removable rail / Replace with stone guardwall on 4' footer (150 LF)	

Section	Segment	Mile Post	Identified Problem / Potential Solution (Magnitude)	FHWA#
	Weeping Wall	28.25	Stone masonry wall / See FHWA report	
		28.8	No grate on concrete box trench drain inlet / Install bollard (1 EA)	
		28.9	Leaning guardwall / Remove wall and footer, roadway rehab, replace 4' footer and rebuild guardwall (100 LF)	
		28.9	Water damage to guardwall / Remove and repalce on new concrete pavement, Rebuild half at a time (100 LF)	
		28.9	Water washing out under slab - cracking and moving slab / Remove all concrete, rehab roadway, and replace with concrete slab after installing 6 inlets with corten 10 grates (1200 SY)	
		29	Grout cracking and spalling throughout stone retaining wall / Point and patch See FHWA Report (1800 SF)	
0		29	Impact damage and cracking to guardwall / Rebuild guardwall on 4' footer (330 LF)	
<u>ii</u>		29.1	Exposed concrete on backside of guardwall / Bush hammer and stain (75 LF)	
Apline	Big Bend	29.1	Missing Castellations on guardwall / Place castellations (50 LF)	
		29.3	Large amount of rock for recovery / Use slusher for retrieval (220 CY)	
		29.3	No grate on inlet / Install bollard (1 EA)	
		29.4	Guardwall susidence and tipping / Remove wall and footer, roadway rehab, replace 4' footer and rebuild guardwall (200 LF)	
		29.5	No grate on inlet / Install bollard (1 EA)	
		29.5	Guardwall susidence and tipping / Remove wall and footer, roadway rehab, replace 4' footer and rebuild guardwall (125 LF)	
		29.6	No grate on inlet / Install bollard (1 EA)	
		29.6	Guardwall rock color does not match / Apply stain (8 hr)	
		29.6	Rock face above road with loose rock / Scale, crane and hand (20 hr)	
		29.7	Superelev. Forces water to wall with no outlet / Install 3 inlet system with one outlet, rock arch over pipe at penetration and rip rap end treatment (3 EA)	
		29.7	Stone masonry wall is leaning, road is moving / Remove top 4', roadway rehab, 12' slab w/ piles and anchors, rebuild wall (107 LF) drainage needs end treatment and rip rap D182(20	
			CY rip rap)	
		29.7	Tipping guardwall / Combo roadway template rehab and remove and replace (125 LF)	
		29.7	Rock face above road with loose rock / Scaling, crane and hand (100 hr)	
		29.7	Shallow guardwall footing showing - outside edge / Bury it (75 LF)	
		29.82	CMP wth stone headwall - no grate on Inlet / Install Bollard (1 EA)	
	Big Bend	29.88	Tipping guardwall / Remove and replace on 8' moment slab (60 LF)	

Section	Segment	Mile Post	Identified Problem / Potential Solution (Magnitude)	FHWA#
		29.9	Modern concrete gurardwall D186inner and top surfaces incompatible rock -outside has	
			none / Replace stone with compatible or roughen and stain faces (125 LF)	
		29.9	Rock face above road with loose rock / Scaling, crane and hand (75 hr)	
		29.9	Reinforced concrete tieback wall - wall missing stone face - concrete barrier portion too high / Remove stone and reinstall to historic spec - cut barrier off pour core wall and face with	
		20.0	rock (660 SY)	
		30	Bedrock spalling below pillar of arches / Temporay repair made / See FHWA Report	
		20	Removable rail is non crash tested / Remove existing removable - install ARG - no anchor -	
		30	See FHWA plans (170 LF)	
		30.1	No grate on inlet / Install bollard (1 EA)	
		30.1	Triple Arches - stone manosry retaining wall - Low guardwall / Full width roadway template	
Φ		00.1	lowering - See FHWA report (450 SY)	
Alpine		30.1	Triple Arches - stone masonry retaining wall -voids in grout, minor foundation erosion / Point	
¥			an dpatch, grout foundation repair See FHWA report (45 LF)	
		30.15	Uphill road cut slope erosion / Try Macafarri Wire Mesh - Biomat (800 SY)	
		30.15	Low guardwall with some subsidence / 12' Slab with anchors and piles (150 LF)	
	Triple Arches	30.18	Guardwall tipped and low some subsidence / Roadway template rehab, plus 4'footer under rebuild (150 LF)	
		30.3	Concrete pipe with stone headwall broken at outlet / Need bollard (1EA)	
		30.3	Guardwall low / Remove and replace on 4' footer (400 LF)	
		30.4	Superelev causes drainage to wall with no outlet / Add pipe, drop inlet, rip rap (1 EA)	
		30.4	Roadway localized settling, subgrade problem / Remove and repalce subgrade with suitable material (25 CY)	
		30.4	Guardwall low / Lower roadway 4-6" (450 SY)	
		30.5	Guardwall susidence and tipping / Remove and replace on 8' moment slab - may need anchors (220 LF)	
		30.5	Guardwall tipped and low some subsidence / Roadway template rehab, plus 4'footer under rebuild (75 LF)	
		30.5	Trench drain end concrete section - Outfall undermined / Remove taper section, add rock rundown (10 CY)	
			Drainage against walls / Every 100 LF where super drains to wall, add drop inlet (15 EA)	
		30.6	Roadway drainage against guardwall / Install drop inlet (1 EA) and rip rap (2 CY)	
		30.0	Material to back top of guardwall / Leave dirt down 6"	
		30.7	·	
		30.7	Roadway settlement, movement / 12' Slab with anchors and piles (250 LF)	

Section	Segment	Mile Post	Identified Problem / Potential Solution (Magnitude)	FHWA #
		30.7	Removable rail is non crash tested / Remove existing removable (160 LF)	
		30.78	Roadway settlement, sag in asphalt / Remove and replace subgrade - full width - leave wall in place - excv behind wall (150 LF)	
		30.8	Guardwall settling, tipping / Rebuild wall on 8' slab (130 LF)	
			Stone retaining wall erosion, under drainage, loose stones, foundation undermined / Point	
		30.8	and patch - rebuild wall under drainage - See FHWA Report (100 LF)	30.65
		30.84	Stone retaining wall erosion under footing / Grout - concrete under footing - See FHWA Report (10 CY)	30.68
		30.85	Drainage pipe failing, erosion problems / Install new 30" RCP - rip rap run down - leave arch in wall above new pipe (50 LF)	
		30.89	Guardwall subsidence / Remove and replace on 4' slab (150 LF)	30.68
ne		30.9	Guardwall grout spalling, cracking / Extensive point and patch (28 LF)	
Alpine	Triple Arches	31	Guardwall stone different color than adjacent original wall / Stain stone and bury exposed footing (150 LF)	
		31.1	Drainage crossing outfall undernined / Remove outfall chute - install rip rap energy dissipator - need bollard at inlet (20 CY)	
		31.18	Guard rock area - slope erosion and subsidence / Install 12' slab anchored with micropiles and tiebacks (200 LF)	
		31.2	Drainage crossing plugging and erosion / Install 30 " pipe daiagonally across road (90 LF) rip rap (10 CY) corten trash grate	
		31.2	Trench drain plugged / Clean (5 hr)	
		31.2	Guardwall rock and snow damage also low / Install removable w/anchors (500 LF) lower template (130 LF)	31.06
		31.3	Loose material on rock face above road / Hang mesh on high wall during construction - close trail (700 SY)	
		31.3	Roadway drainage running along walls / Install concrete pan (200 LF) to drop inlet, pipe downhill (100 LF) rip rap (10 CY)	
		31.3	Guardwall damage and tipping /Remove and replace with removable rail on 12' slab with anchors - no piles (1650 LF)	
	Triple Arches	31.4	Stone masonry retaining wall undermining causing outward deflection / See FHWA Task Order 6	
		31.8	Rock face above road with loose rock / Scaling, crane and hand (50 hr) good rock	
		31.9	Randon rubble guardwall isolated damage / Install 4' slab repair (100 LF)	
		32.4	Guardwall low / Add guardwall (100 LF)	

Section	Segment	Mile Post	Identified Problem / Potential Solution (Magnitude)	FHWA #
	Oberlin Bend	32.4	Edge of roadway eroded, losing shoulder / Removable guardrail on 12' slab - piles and anchors (210 LF)	
		32.5	Low guardwall / Remove 4-6" asphalt (300 LF)	
		32.7	Extensive guardwall damage / Core wall with slab (150 LF)	
Je		32.9	Roadway settlement / Roadway template rehab (300 LF)	
Alpine		32.9	Guardwall tipping / Rebuild on 4' footer (100 LF)	
¥		33	Grout cracking and spalling throughout stone retaining wall / Point and patch, spot section rebuild See FHWA Report (80 SY)	32.86
		33	Stone mansory wall height low by 6-8" / Lower template 550 LF (1100 SY)	
	East Tunnel	33.2	Top portion of stone masonry wall damaged / Rebuild top portion - point and patch (200 LF)	33.00
		33.2	Heavy damage stone guardwall / Rebuild on 4' footer (250 LF)	
		33.3	Guardwall tipping, undercut, some missing / Pull wall, pull in towards CL 2 (200 LF)	
		33.3	Rock face above road with loose rock / Scaling, crane and hand (100 hr)	
		33.4	Avalanche zone taking guardwall / Install ARG on slab with piles (200 LF)	
		33.4	No drainage across road / Drop inlet with 50' of 24" RCP, rip rap outfall (1 LS)	
		34.75	Roadway super - drainage problem / Remove 4-6" asphalt (300 LF)	
		34.78	Rundown erosion, invert damage, spalling, rebar exposed / Abrasion plating - rip rap (20 CY)	34.53
e k	Siyeh Bend	34.82	High sediment flow causing headwall damage and plugging from masonry smooth rundown / Add small carch dam above masonry rundown	
Baring Creek		35	Side slope erosion, sediment wash over roadway / Realign roadway - install catch ditch or wall	
Barin		36.7	Sediment flow plugging culvert -erosion problem / Install rock drop - flat spot - replace 30" RCP (75 LF) rip rap (30 CY)	
	Jackson Glacier	37.4	High sediment and erosion debris flow / Install bollard type trash guard above road	
		37.4	High sediment and erosion debris flow / Install 30" RCP (75 LF) rip rap rock rundown (20 CY)	
	Baring Creek Bridge	39.45	Stone masonry wall under construction / See FHWA report (75 LF)	
		41.1	Guardwall settling / Add to wall height (200 LF)	
		41.1	Rock face above road with loose rock / Scaling, crane and hand (50 hr) good rock	
	Dead Horse Point	41.5	Top 4' of wall in need of repair Rebuild top 4' - See FHWA report (218 LF)	41.36
		41.5	Low guardwall / Rebuild guradwall on 4' footing (200 LF) and mill WB lane (400 SY)	
		41.5	Moving subsiding guardwall / Install 8' slab with micropiles rebuild guardwall (130 LF)	

Section	Segment	Mile Post	Identified Problem / Potential Solution (Magnitude)	FHWA #
•	Wild Goose	43	Ped xingng with short sight distance / Realign roadway slightly (1500 LF) add signing	
	Golden Stairs	43.35	Stone masonry retaining wall east end 75' sagging, tipping / Subex (100 CY) slab w/ core wall w/piles (75 LF)	43.14
		43.3	Low guardwall / Add rock to raise (200 LF)	
Mary		43.3	Rock face above road with loose rock / Scaling, crane and hand (75 hr)	
St. M		43.3	No drainage crossing / Add inlets (3 EA) 24" RCP (200 LF) with I outlet - provide arched outfall	
	St. Mary Slump	48.2	Roadway slump area / Monitor shore erosion - add rip rap protection (75 CY) to toe - tiebacks if necessary	
	Divide Creek Bridge	49.3	High bedloading of Divide Creek Bridge / Add additional capacity - cells	